

CHAMBERS WINDOW GLASS COMPANY
(American Window Glass Company)
(American Saint-Gobain)
(ASG)
North of Drey (Nineteenth) Street,
West of Constitution Boulevard
Arnold
Westmoreland County
Pennsylvania

HAER No. PA-336

HAER
PA
65-ARN,
1-

WRITTEN HISTORICAL AND DESCRIPTIVE DATA
PHOTOGRAPHS

Historic American Engineering Record
National Park Service
Department of the Interior
P.O. Box 37127
Washington, D.C. 20013-7127

HISTORIC AMERICAN ENGINEERING RECORD

CHAMBERS WINDOW GLASS COMPANY
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Location: N. of Drey (19th) Street, W. of
Constitution Blvd., Arnold,
Westmoreland County, Pennsylvania

Date of Construction: ca. 1892

Fabricator: unknown

Present Owner: Burrell Construction

Present Use: Construction Company site

Significance: One of the largest window glass
factories in the United States, the
Arnold plant was the site of
numerous technological innovations,
including the Lubbers cylinder
drawing machine.

Historian: Gray Fitzsimons

Project Information: The results of the study of Westmoreland
County were published in 1994: Edward K. Muller, Ronald C.
Carlisle, principal contract historians; Gray Fitzsimons, Kenneth
D. Rose, editors, Westmoreland County Pennsylvania: An Inventory
of Historic Engineering and Industrial Sites (Washington, D.C.:
America's Industrial Heritage Project and Historic American
Buildings Survey/Historic American Engineering Record, National
Park Service, Department of the Interior).

The contents of this publication were transmitted to the Library
of Congress in report form. Research notes, field photos and
copies of historic photos collected during the project were
transmitted to the AIHP Collection, Special Collections,
Stapleton Library, Indiana University of Pennsylvania, Indiana,
PA 15705.

DESCRIPTION

The American Window Glass Factory No. 1 at Arnold is located on a terrace adjacent the Allegheny River. Office Building: red brick, stretcher bond; two-and-a-half stories with full, partially exposed basement; measures 65' x 39'; hipped roof of slate; ashlar foundation; first floor has central Romanesque arch of brick with ashlar steps leading to in antis portico; on first floor, arched segmented windows and windows with lintels; second floor has multipane windows with flat and round arches, ashlar sills and brick labels above round arched windows; string course of brick above second story windows; string course of ashlar divides window sections; wooden dentil work at cornice; decorative roof brackets.

Melting Building No. 2: red brick, common bond; two-and-a-half stories; metal roof; brick bearing walls with pilasters; steel framing; multipane casement windows; half round windows bracket arched windows on second floor with porthole window above; machinery removed and building gutted. Melting Building No. 3: red brick, common bond; three stories; metal roof; coursed rubble stone foundation; steel fan Fink trusses; brick bearing walls with pilasters; half-round windows bracket a series of six arched windows with brick voussoirs and brick labels, porthole window above; attached is one-story carpenter shop. Machinery: yellow brick kilns, furnace, glass cutting machines, drawing and cutting machinery for Fourcault process.

Cutting Room and Flattening House: double building of red brick, common bond; one and one-and-a-half stories; corrugated metal roof supported by steel trusses and wooden rafters; coursed rubble stone foundation; brick bearing walls with pilasters; brick floors; multipane casement windows and one-over-one-light double-hung windows; metal shoots on exterior wall.

Warehouse: red brick, common bond; two stories; metal roof; coursed rubble stone foundation; most windows infilled with brick; brick bearing walls with pilasters.

Batch Plant: six silos of sheet metal with concrete foundations and conveyor belt across top; mixing machines on lower level intact. Stack: brick with concrete base; used for natural gas. Producer House: red brick, stretcher bond; three stories; metal roof with monitor; multipane casement windows; steel framing and support beams with pin connections; exterior iron support brackets; vacant and in ruins. Recent metal and yellow brick buildings complete the existing complex.

The buildings in the glass plant are currently owned by the Burrell Construction Company and function for raw material storage. The box-making shop collapsed in 1977. The tank furnaces and all of the Fourcault window-glass machines have been removed from the buildings. Also, the gas producer house was recently demolished. Two drawing machines stamped "Sommerfeld Machine Company, Braddock, Pennsylvania" stand outside the carpenter shop.

Part of the batch plant has also been demolished but a small electric car used to transport the raw materials remains. The cab has a wooden door with a plate proclaiming "GE Switcher" patented 1907. A plate affixed to the outside of the car was inscribed "Built by Atlas Car and Mfg. Co., Cleveland, Ohio, for Bollinger-Andrews Construction Co. Designing Engineers and Contractors, Structural Works and Foundry, Verona Pennsylvania, Offices, Pgh., Pa."

HISTORY:

The Chambers Glass Works was built in 1892 by James Chambers and family, former business partners with Sellers McKee in the McKee-Chambers Glass Company in Jeannette. Construction of the new Arnold glass plant was completed in 1892, and by 1905 it was one of the largest single window glass plants in the world, employing nearly one thousand workers. As in Jeannette, the company contracted to erect new workers' houses. Some 100 houses were erected in 100 days.

Initially, all glass at the factory was handblown by skilled craftsmen, many of Belgian and French descent. Blowers were paid by the box, and flatteners and cutters earned a percentage of blowers' wages. Cutters were paid on a straight piece rate.

John Lubbers, employed as a flattener at the plant, developed the first successful cylinder-blowing machine, displacing blowers and gatherers in all American Window Glass Plants in 1904. The Lubbers process used a circular metal "bait" about ten inches in diameter that was lowered on the end of a heavy blowpipe into the surface of the molten glass. It was then removed slowly and by using carefully controlled compressed air for blowing, and an electrical hoist for lifting, a cylinder of glass as large as 45' long and 48" in diameter could be drawn. The cylinder was then split, flattened, annealed and cut into window lights. This process permitted the production of larger window lights at a reduced cost. The first commercial cylinder drawn by this process measured 5' to 6' in length by 8" to 10" in diameter. American Window Glass installed Lubbers machinery in all its

plants by 1907. But there were problems with the quality of the glass produced by the Lubbers method that were overcome when the company installed machines using the Fourcault method in 1927.

The Fourcault process made glass by drawing it vertically in flat sheets. Since the process was continuous, with raw materials entering one end of a tank-machine and exiting at the other, the result was a perfectly flat and continuous ribbon of glass (which was cut off at intervals into sheets). This new process produced a degree of flatness and uniformity of thickness that was impossible to attain with the earlier technology. The Chambers Glass Company became Factory No. 1 of the American Window Glass Company in 1899, which merged with Saint Gobain in 1958 to form American-Saint Gobain.

This firm had factories at Arnold, Jeannette (Factory 2) and Belle Vernon, among others, and made many types of glass sold under various patented names. As of 1938 these included: Plexite, a laminated safety glass that "gives" under impact, provides clearness of sight and shuts out noise, intended for aircraft and automotive use; Armormite, a bulletproof glass that provides positive protection against gun fire, approved by Underwriters Laboratories, Incorporated; Lustragold, a new amber glass for decorative works; Lustrawhite, a high-quality picture glass; and Lustrablue, a translucent blue glass for mirrors, tabletops and other ornamental purposes. The company also produced photographic glass, bulb edge glass, ground glass and chipped glass. The company made special glass for industrial and scientific purposes, some as thin as 25/1000 of an inch.

Sources:

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